

Welcome to Techniques for Wildfire Detection and Monitoring

We will begin promptly at 10:00 EDT (UTC-4)

Course Format:

- Two, two hour sessions
- Sessions will be held on July 12 and 19, 2018
- All attendees will be muted automatically upon entry
- This session will be recorded and made available to you within two days

Please be sure you have completed the prerequisites on the training website:

<https://arset.gsfc.nasa.gov/land/webinars/adv-wildfire-2018>



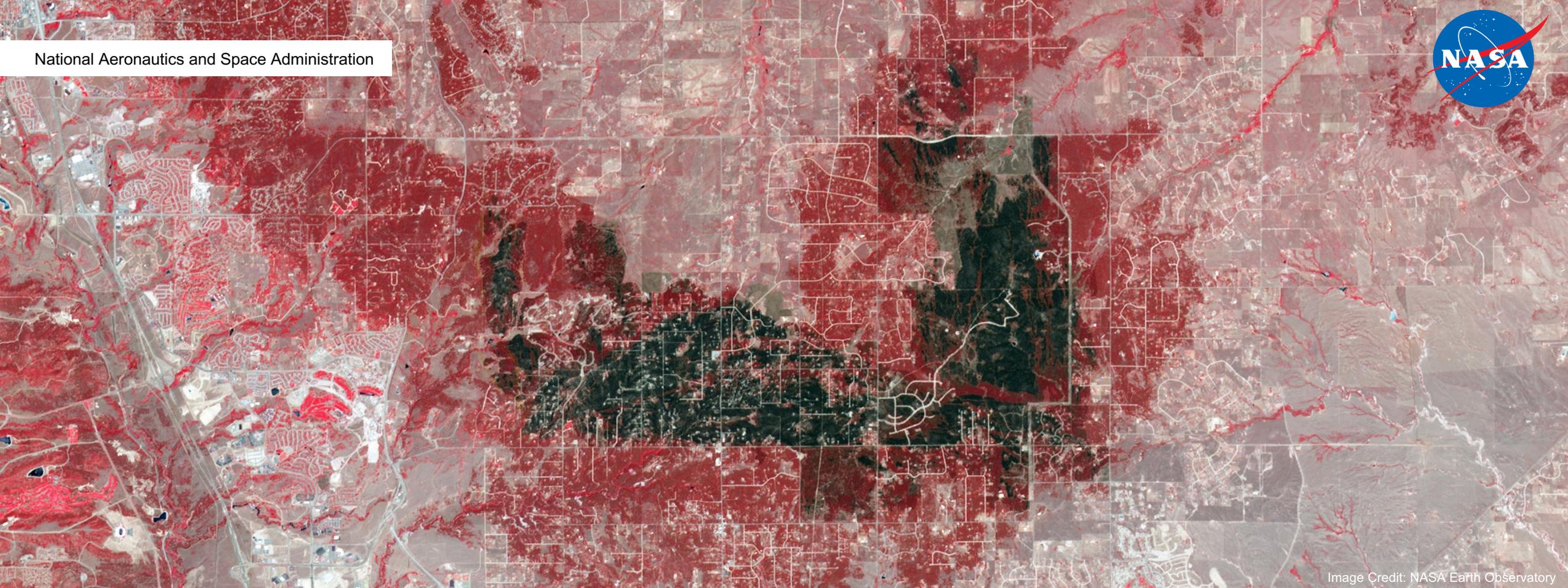
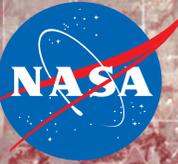


Image Credit: NASA Earth Observatory



Techniques for Wildfire Detection and Monitoring

Cindy Schmidt and Amber McCullum

Week 2: 07/19/2018

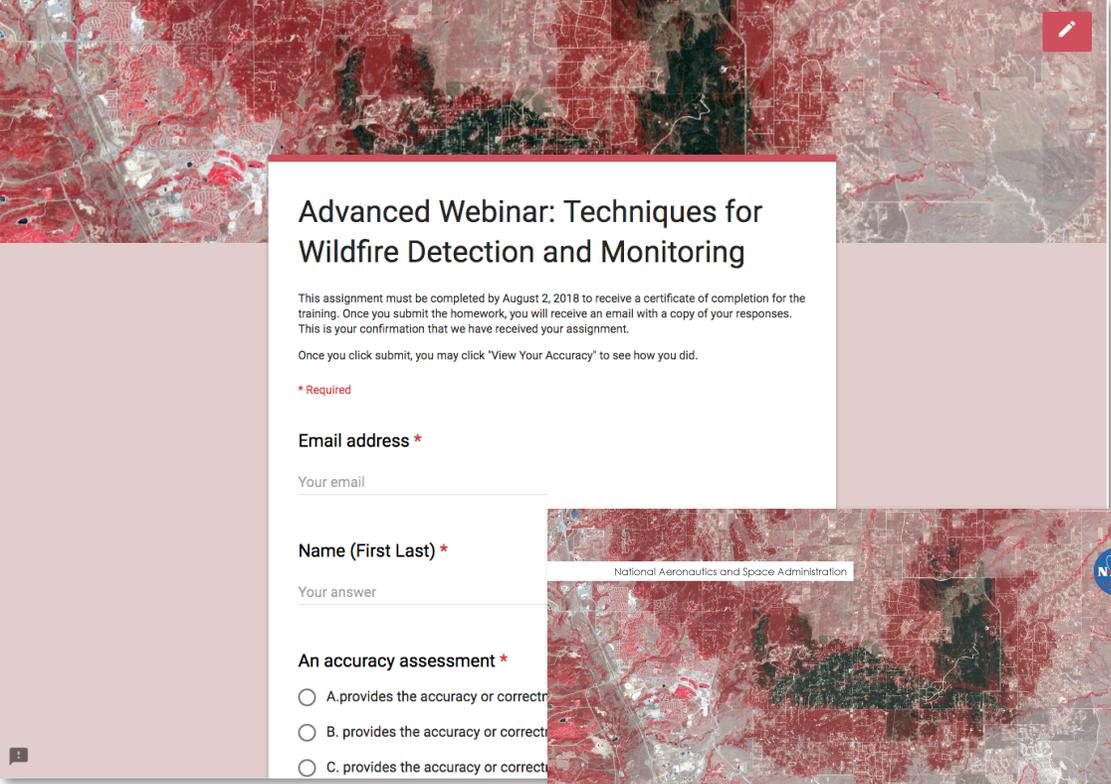
Course Structure

- Two 2-hour sessions on July 12 and 19, 2018
 - Session A: 10:00-12:00 EDT (UTC-4)
 - Session B: 18:00-20:00 EDT (UTC-4)
 - Please only sign up for and attend one session
- Guest speaker, Josh Picotte with the USGS EROS/ASRC Federal InuTeq
- Webinar recordings, PowerPoint presentations, and the homework assignment can be found after each session at:
 - <https://arset.gsfc.nasa.gov/land/webinars/adv-wildfire-2018>
 - Q&A: Following each lecture and/or by email
 - cynthia.l.schmidt@nasa.gov, or
 - amberjean.mccullum@nasa.gov



Homework and Certificates

- Homework
 - One homework assignments
 - Answers must be submitted via Google Forms
- Certificate of Completion:
 - Attend both live webinars
 - Complete the homework assignment by the deadline (access from ARSET website)
 - **HW Deadline: August 2nd**
 - You will receive certificates approx. two months after the completion of the course from:
marines.martins@ssaihq.com



Advanced Webinar: Techniques for Wildfire Detection and Monitoring

This assignment must be completed by August 2, 2018 to receive a certificate of completion for the training. Once you submit the homework, you will receive an email with a copy of your responses. This is your confirmation that we have received your assignment.

Once you click submit, you may click "View Your Accuracy" to see how you did.

*** Required**

Email address *

Your email

Name (First Last) *

Your answer

An accuracy assessment *

A. provides the accuracy or correct

B. provides the accuracy or correct

C. provides the accuracy or correct

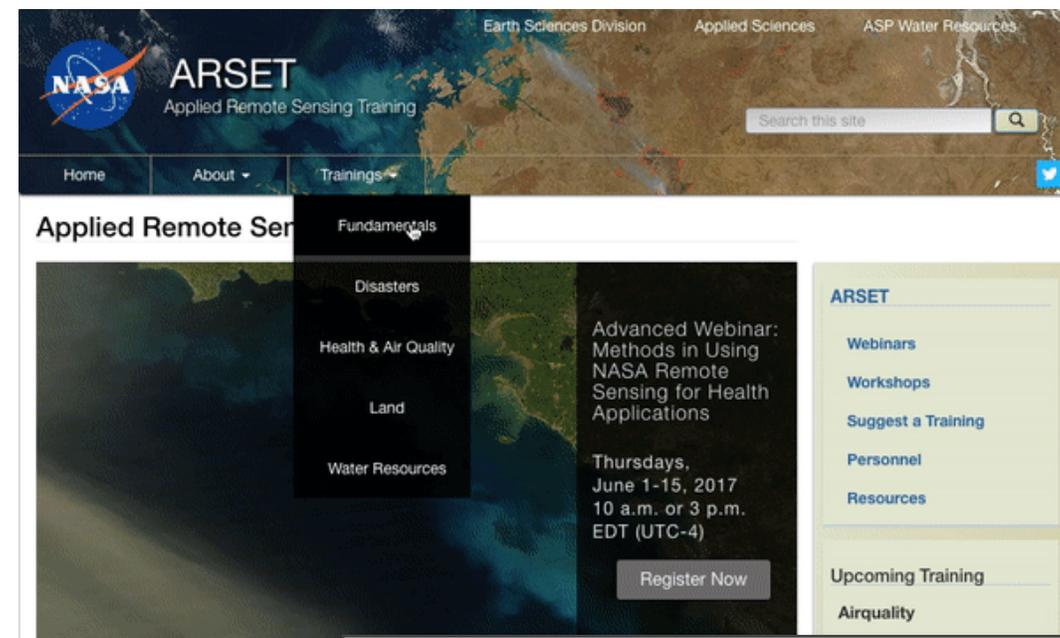


NASA's Applied Remote Sensing Training Program (ARSET)
presents a certificate of completion to
Amber McCullum
for completing:
Advanced Webinar: Techniques for Wildfire Detection & Monitoring
July 12-19, 2018
Trainers: Cindy Schmidt



Prerequisites

- Fundamentals of Remote Sensing
 - Sessions 1 and 2A (Land)
 - On demand webinar, available anytime
 - <http://arset.gsfc.nasa.gov/webinars/fundamentals-remote-sensing>
- [Download and install QGIS](#) and all accompanying software Use this exercise for help: [Downloading and Installing QGIS](#)
 - We strongly recommend you open QGIS and ensure the software is working prior to starting the webinar

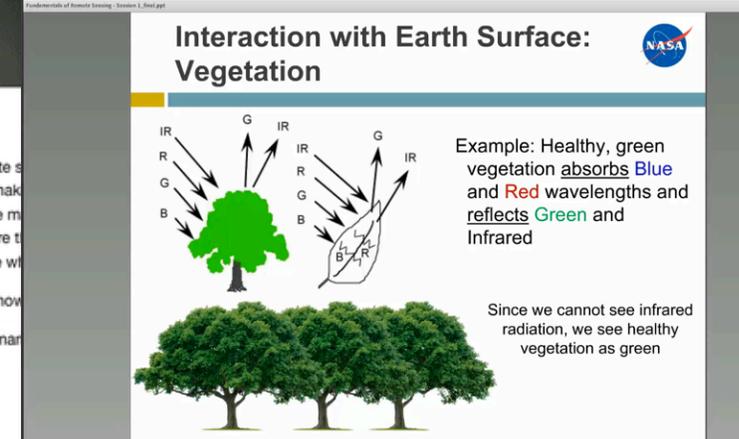


The screenshot shows the ARSET (Applied Remote Sensing Training) website. The header includes the NASA logo, the text "ARSET Applied Remote Sensing Training", and navigation links for "Earth Sciences Division", "Applied Sciences", and "ASP Water Resources". A search bar is present. A navigation menu is open, showing options: "Fundamentals", "Disasters", "Health & Air Quality", "Land", and "Water Resources". A sidebar on the right lists "ARSET" resources: "Webinars", "Workshops", "Suggest a Training", "Personnel", and "Resources". Below this, it says "Upcoming Training" with "Airquality".

Advanced Webinar: Methods in Using NASA Remote Sensing for Health Applications

Thursdays, June 1-15, 2017
10 a.m. or 3 p.m. EDT (UTC-4)

Register Now

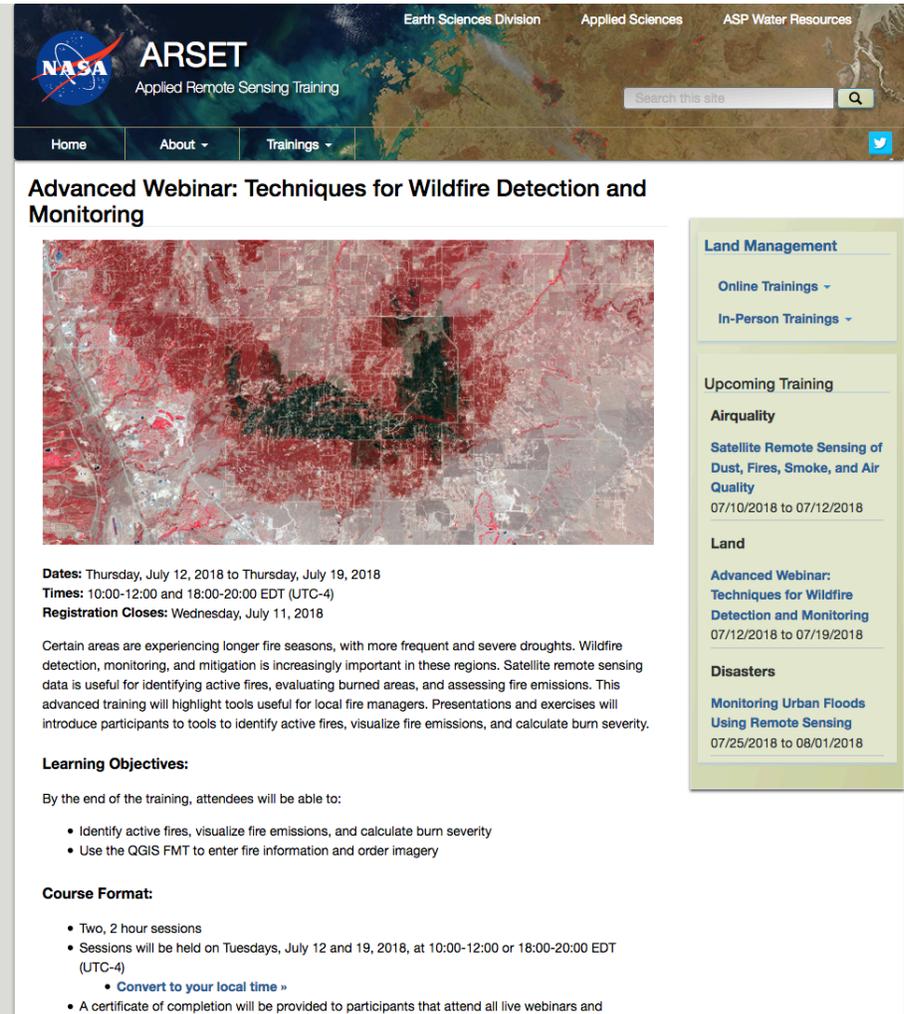


The slide is titled "Interaction with Earth Surface: Vegetation" and features the NASA logo. It contains a diagram showing a tree with arrows representing radiation: IR (Infrared) and G (Green) are shown being reflected away from the tree, while R (Red) and B (Blue) are shown being absorbed by the tree. Below the diagram is a photograph of a row of green trees. Text on the right explains: "Example: Healthy, green vegetation absorbs Blue and Red wavelengths and reflects Green and Infrared". A note at the bottom right states: "Since we cannot see infrared radiation, we see healthy vegetation as green".



Accessing Course Materials

<https://arset.gsfc.nasa.gov/land/webinars/adv-wildfire-2018>



The screenshot shows the ARSET (Applied Remote Sensing Training) website. The header includes the NASA logo, the text 'ARSET Applied Remote Sensing Training', and navigation links for 'Home', 'About', and 'Trainings'. The main content area features a satellite image of a wildfire-affected region. To the right of the image is a sidebar with categories: 'Land Management' (with sub-links for 'Online Trainings' and 'In-Person Trainings'), 'Upcoming Training' (listing 'Airquality' and 'Satellite Remote Sensing of Dust, Fires, Smoke, and Air Quality' from 07/10/2018 to 07/12/2018), 'Land' (listing 'Advanced Webinar: Techniques for Wildfire Detection and Monitoring' from 07/12/2018 to 07/19/2018), and 'Disasters' (listing 'Monitoring Urban Floods Using Remote Sensing' from 07/25/2018 to 08/01/2018).

Advanced Webinar: Techniques for Wildfire Detection and Monitoring

Dates: Thursday, July 12, 2018 to Thursday, July 19, 2018
Times: 10:00-12:00 and 18:00-20:00 EDT (UTC-4)
Registration Closes: Wednesday, July 11, 2018

Certain areas are experiencing longer fire seasons, with more frequent and severe droughts. Wildfire detection, monitoring, and mitigation is increasingly important in these regions. Satellite remote sensing data is useful for identifying active fires, evaluating burned areas, and assessing fire emissions. This advanced training will highlight tools useful for local fire managers. Presentations and exercises will introduce participants to tools to identify active fires, visualize fire emissions, and calculate burn severity.

Learning Objectives:

By the end of the training, attendees will be able to:

- Identify active fires, visualize fire emissions, and calculate burn severity
- Use the QGIS FMT to enter fire information and order imagery

Course Format:

- Two, 2 hour sessions
- Sessions will be held on Tuesdays, July 12 and 19, 2018, at 10:00-12:00 or 18:00-20:00 EDT (UTC-4)
 - [Convert to your local time »](#)
- A certificate of completion will be provided to participants that attend all live webinars and

Audience:

This training is primarily intended for local, regional, state, federal, and international organizations involved in wildfire management. Professional organizations in the public and private sectors engaged in environmental management and monitoring will be given preference over organizations focused primarily on research.

Registration Information:

There is no cost for the webinar, but you must register to attend the sessions. Please only sign up for either session A or B, not both.

Session A: 10:00-12:00 EDT (UTC-4) [Register Now »](#)

Session B: 18:00-20:00 EDT (UTC-4) [Register Now »](#)

Course Agenda:

[Agenda.pdf](#)

Session One: July 12

This session will provide an overview of remote sensing for wildfire detection and mapping, as well as an overview of the QGIS Fire Mapping Tool (FMT). Attendees will go through a hands-on exercise using the FMT

QGIS FMT is freely-available and can detect active fires and burn scars using Landsat data. This tool can identify smaller fires that may not be in the Monitoring Trends in Burn Severity program.

Session Two: July 19

This session will provide an overview of the Global Wildfire Information System (GWIS) and a hands-on demonstration on the use of the GWIS viewer.

GWIS is an online web application that uses remotely sensed wildfire data. This data includes fire danger, wildfire locations, burned area extent, and burn severity. GWIS also focuses on sharing data and operational plans between researchers, managers, and agencies. Demonstrations and tools will introduce participants to applications of the GWIS tool, including:

- identifying active fire from MODIS and VIIRS data,
- evaluating burned areas with MODIS data, and
- assessing fire emissions such as black carbon and particulate matter.

Application Area: [Land](#)

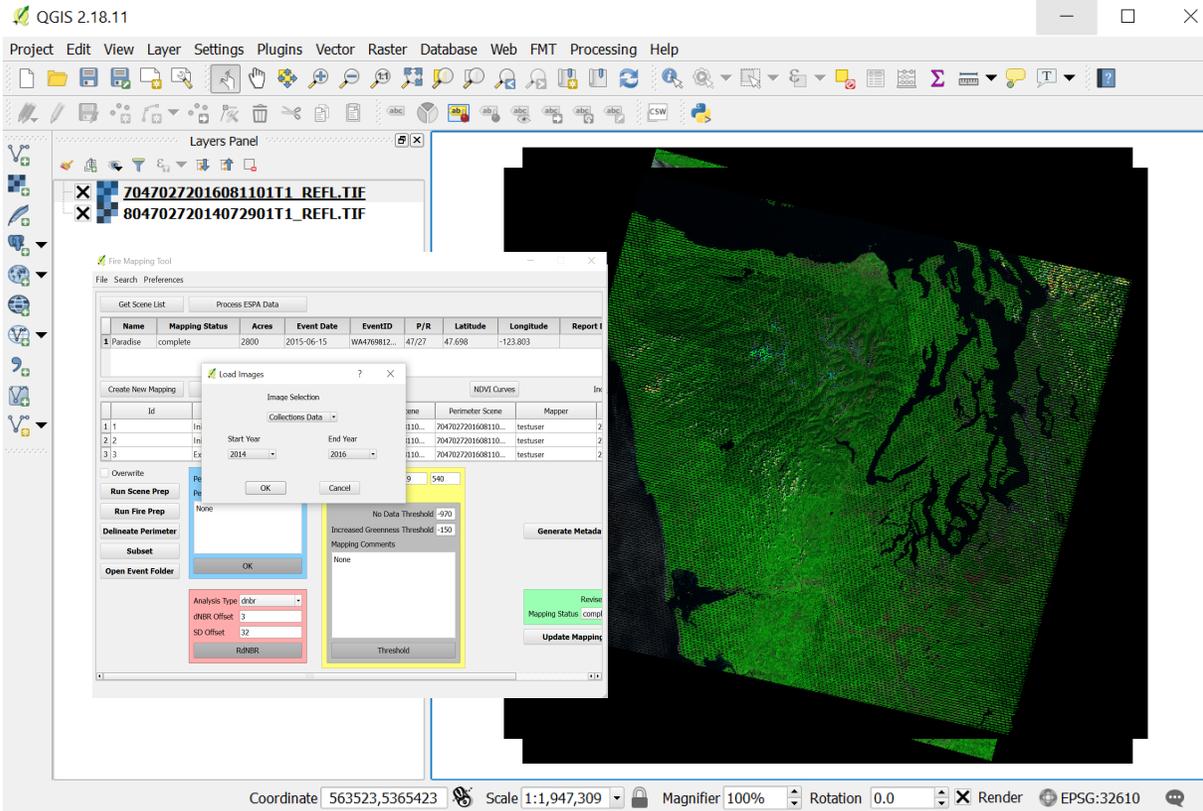
Available Languages: [English](#)

Instruments/Missions: [VIIRS](#), [Landsat](#), [NPP](#), [MODIS](#)

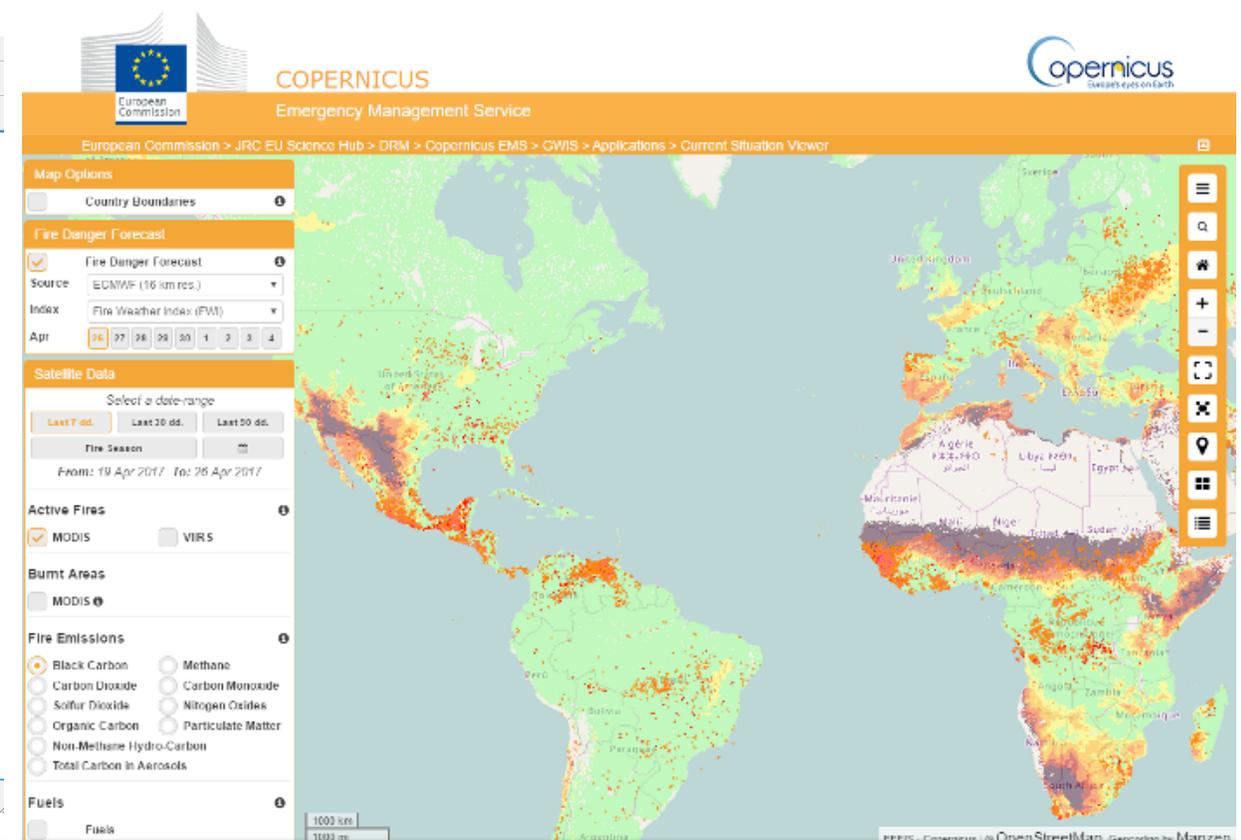
Keywords: [Aerosols](#), [Fires and Smoke](#), [Satellite Imagery](#), [Smoke](#), [Tools](#)



Course Outline



Session 1: Overview of the QGIS Fire Mapping Tool (FMT)

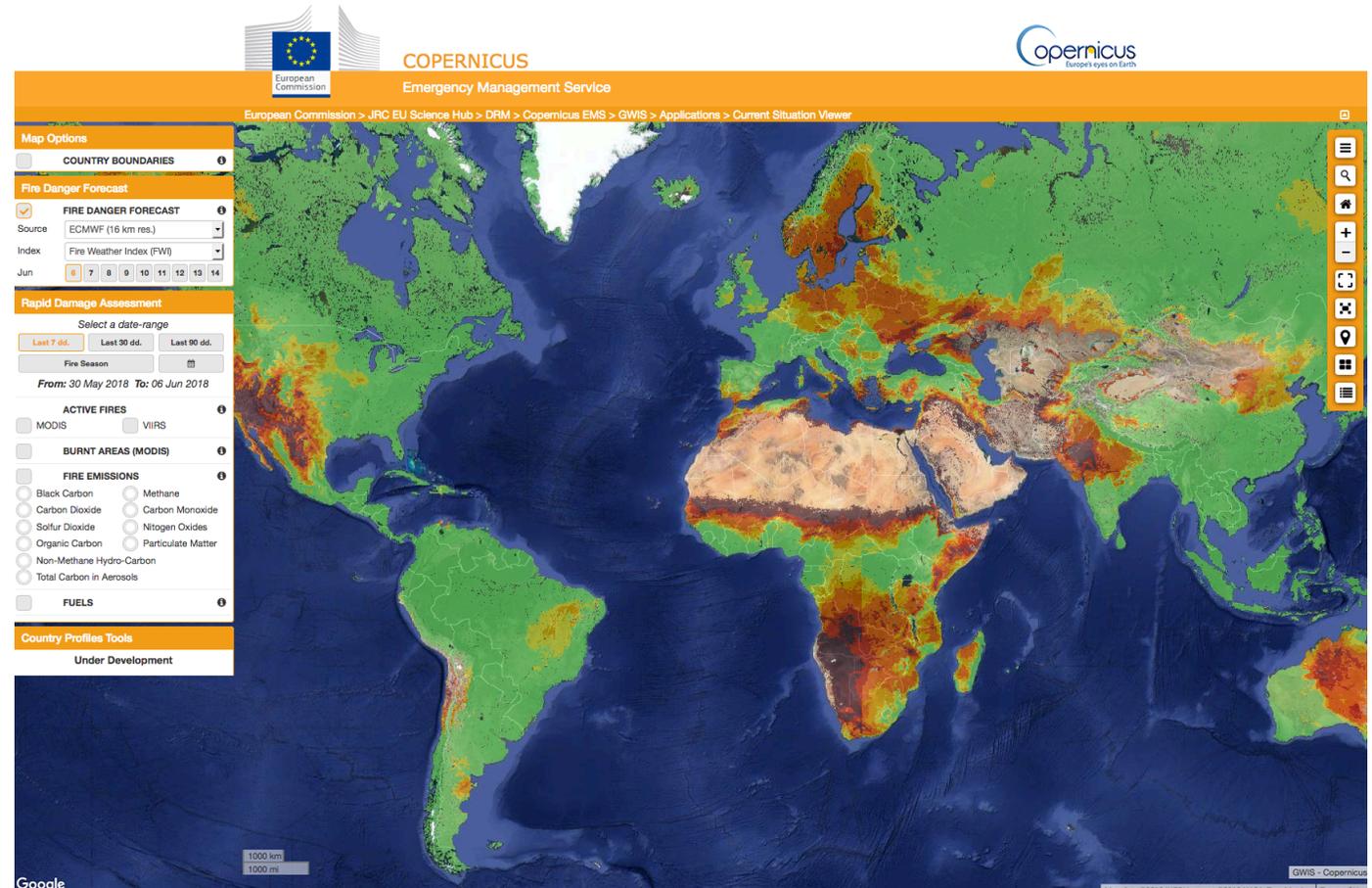


Session 2: Overview of the Global Wildfires Information System (GWIS)



Session 2 Agenda

- FMT Exercise: Part 3
- Overview of the Group on Earth Observations
- Overview of the GWIS
- GWIS features and case-study applications
- GWIS tutorial



Group on Earth Observations

- Intergovernmental organization working to improve the availability, access and use of Earth Observations for the benefit of society (<https://earthobservations.org>)
- There are 105 member countries and 115 participating organizations
- The GEO Work Programme assists GEO with selecting and prioritizing activities
- Societal benefit areas:
 - Biodiversity and ecosystem sustainability
 - Disaster resilience
 - Energy and mineral resources management
 - Food security and sustainable agriculture
 - Public health surveillance
 - Sustainable urban development
 - Infrastructure and transportation management
 - Water resources management



Global Wildfire Information System (GWIS)

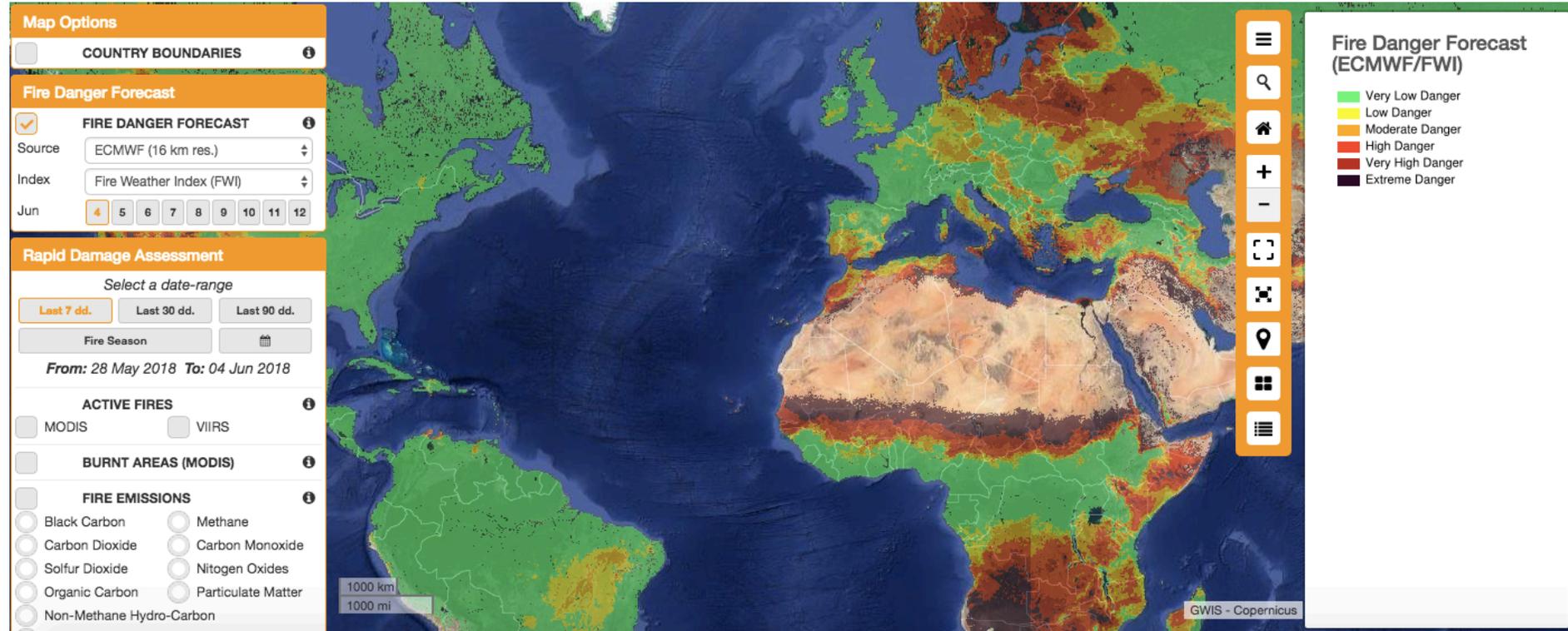
- Joint initiative of the GEO 2017-2019 Work Programme and Copernicus, the European service that delivers near real-time data on a global level to meet user needs.
- Goal: Provide a comprehensive view and evaluation of fire regimes and fire effects at the global level
- Builds on the ongoing activities of the European Forest Fire Information System, The Global Terrestrial Observing System, the Global Observation of Forest Cover – Global Observation of Land Dynamics (GOFC-GOLD) Fire Implementation team, and the associated Regional Networks
- NASA recently funded several projects to enhance the current GWIS
- GWIS viewer:

http://gwis.jrc.ec.europa.eu/static/gwis_current_situation/public/index.html



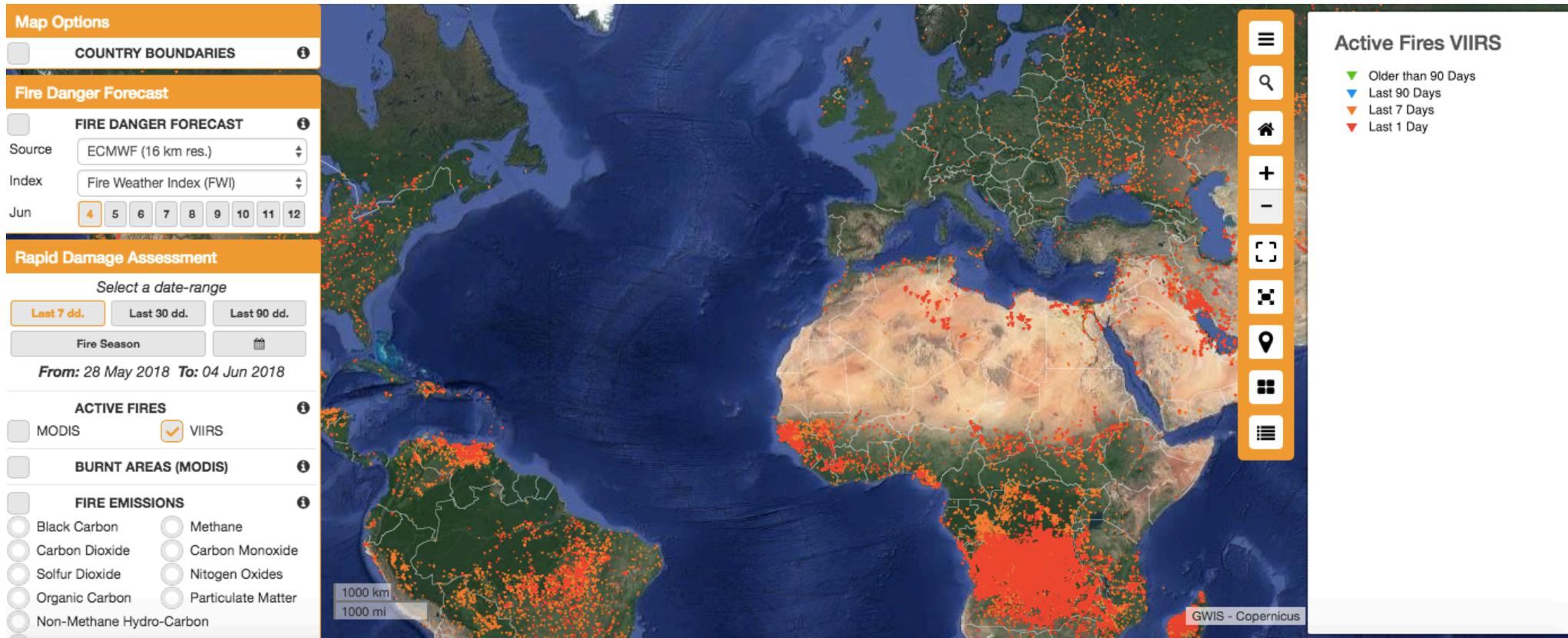
GWIS: Fire Danger Forecast

- Fire danger forecast: Provides daily maps of 1 to 10 days of forecasted fire danger level
- Mapped in 6 classes: very low, low, medium, high, very high
- Spatial resolution: 16km



GWIS: Rapid Damage Assessment

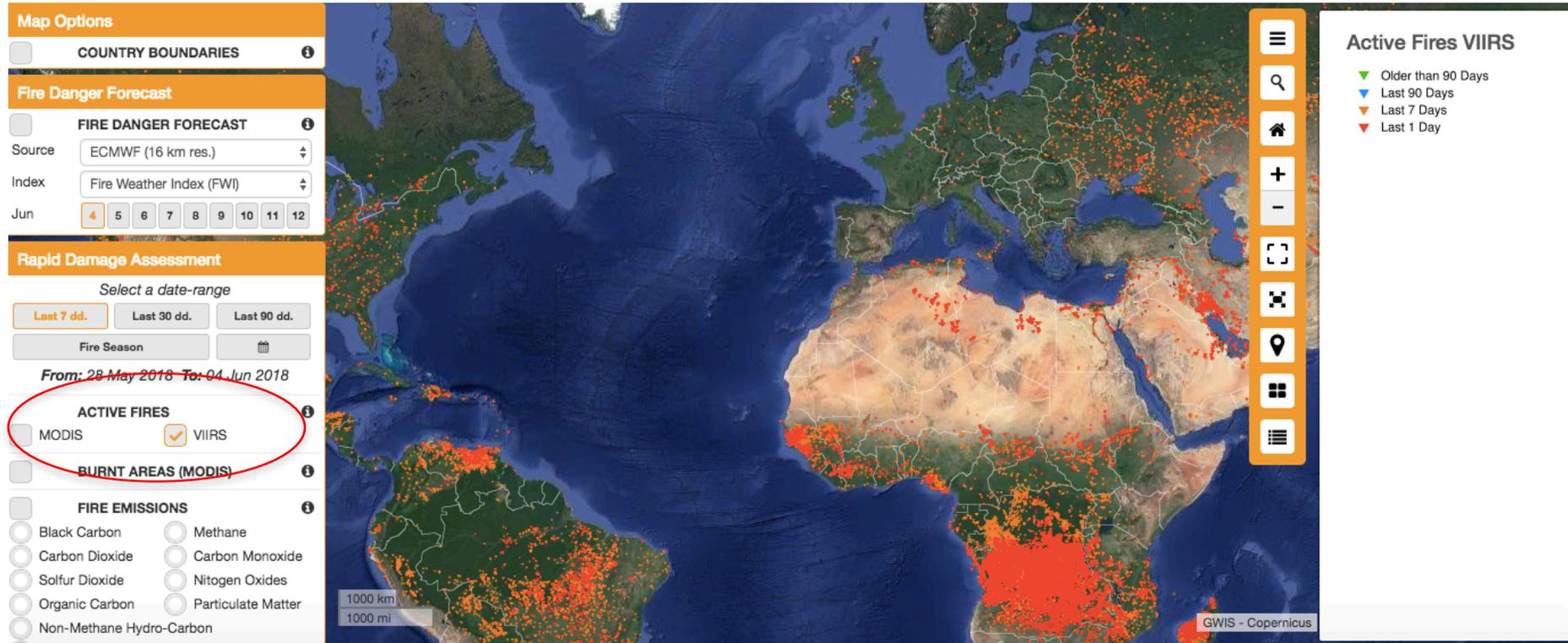
- Active fires (MODIS and VIIRS)
- Fire emissions
- Burnt areas (MODIS)
- Fire emissions
- Fuels



Active Fires

- MODIS
- Spatial resolution: 1km
- Available for 24hrs., 48 hrs. and 7 days after fire

- VIIRS
- Spatial resolution: 375 m

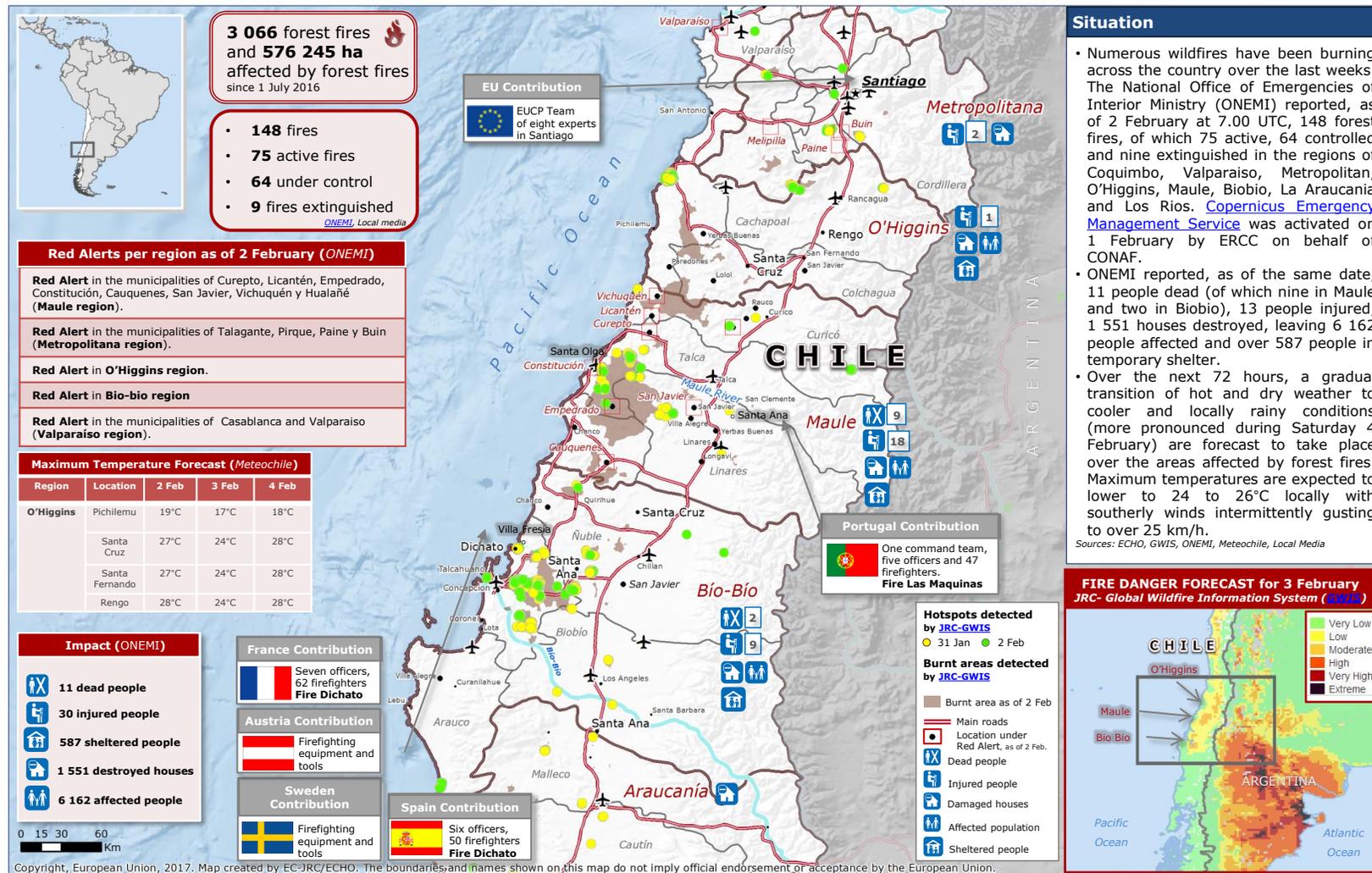


Fire Emissions and Fuels

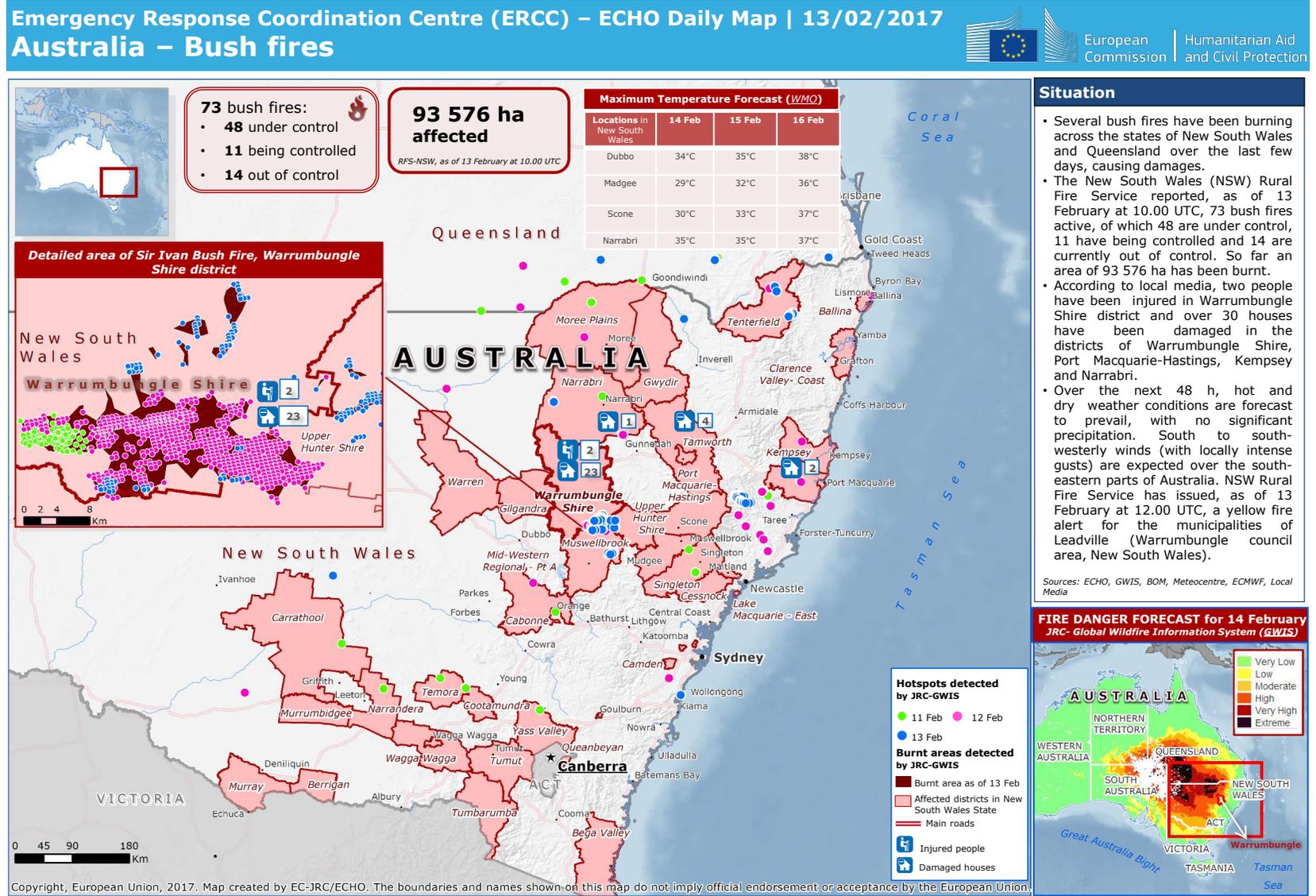


GWIS For Emergency Response: Chile

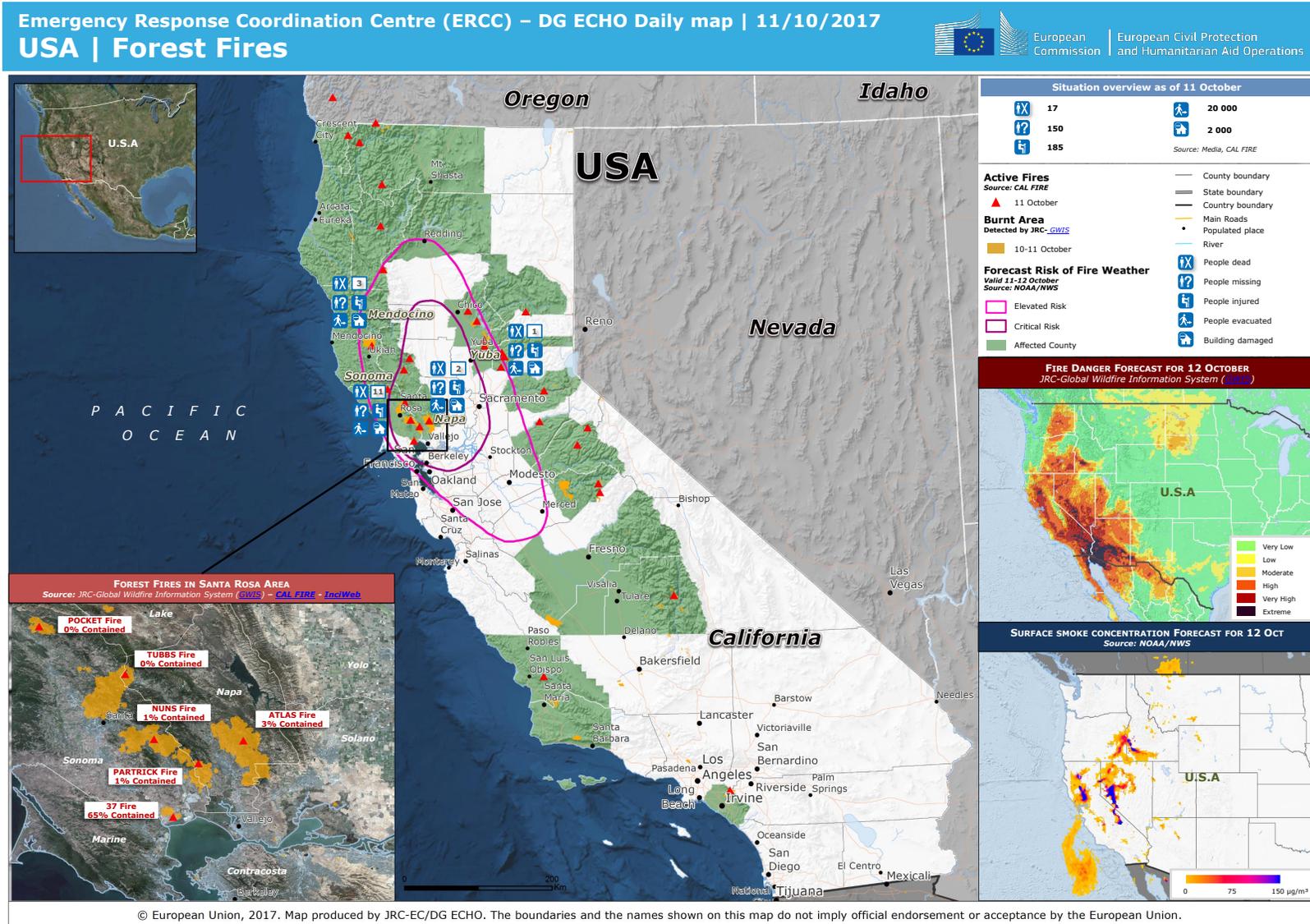
Emergency Response Coordination Centre (ERCC) – ECHO Daily Map | 02/02/2017
Chile - Forest fires EU support



GWIS For Emergency Response: Australia



GWIS For Emergency Response: California



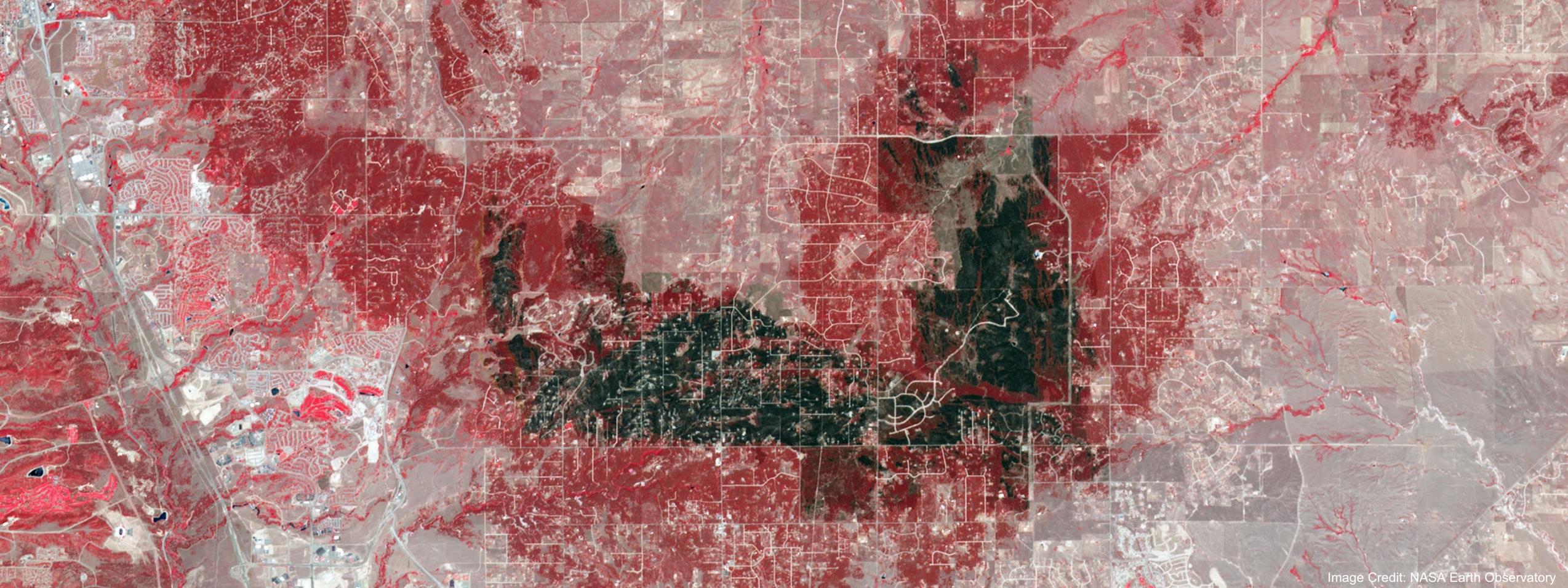


Image Credit: NASA Earth Observatory

GWIS Exercise

Contacts

- ARSET Land Management & Wildfire Contacts
 - Cynthia Schmidt: Cynthia.L.Schmidt@nasa.gov
 - Amber McCullum: AmberJean.Mccullum@nasa.gov
- General ARSET Inquiries
 - Ana Prados: aprados@umbc.edu
- ARSET Website:
 - <http://arset.gsfc.nasa.gov>



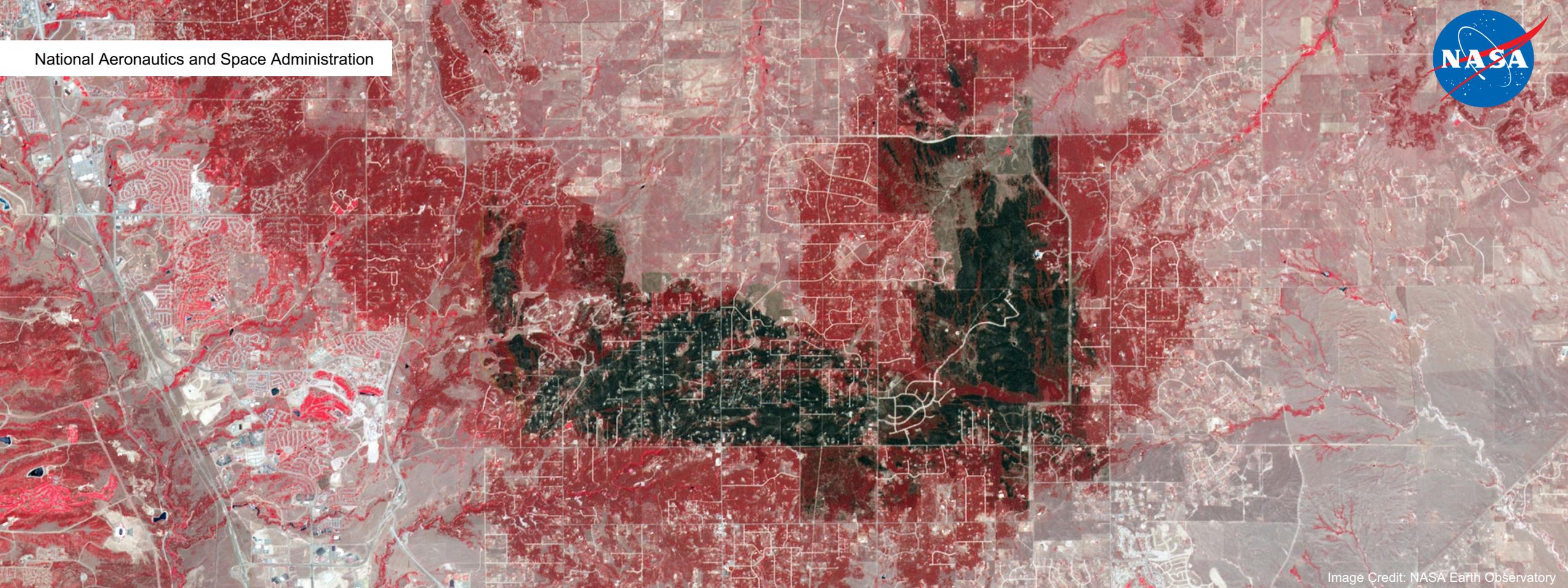
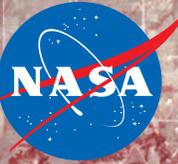


Image Credit: NASA Earth Observatory



Thank You

Reminder: Complete homework by August 2nd, 2018

Question and Answer Session

Please type your questions in the Question Box

Additionally, you can type your name, location, organization, and email address to connect with your fellow land remote sensing professionals.

